EVALUATION OF MARKETING STRATEGIES FOR ELECTRIC & HYBRID ELECTRIC VEHICLES IN NCR

SHORT SYNOPSIS

Submitted in partial fulfillment of the requirement of the degree of

DOCTOR OF PHILOSOPHY

by

Vinay Kumar
Registration No. MRUMCDN012K220026

Under the supervision of

Dr. Yogita Sharma
Professor

Department of Management and Commerce
School of Management and Commerce

MANAV RACHNA UNIVERSITY
Sector-43, Aravali Hills, Faridabad

Year 2024

MANAV RACHNA UNIVERSITY
Declared as State Private University vide Haryana Act 26 of 2014

MANAV RACHNA UNIVERSITY
Sector-43, Aravali Hills, Faridabad

Date: 24-05-24

DECLARATION BY THE SCHOLAR

I hereby declare that the short synopsis entitled **"EVALUATION OF MARKETING STRATEGIES FOR ELECTRIC & HYBRID ELECTRIC VEHICLES IN NCR"** being submitted in partial fulfillment of the requirement for the degree of Doctor of Philosophy in the Department of Management and Commerce under the School of Management and Commerce of Manav Rachna University, Faridabad during the academic year 2023-2024.

It is the work that is expected to be carried out under the supervision of **Dr. Yogita Sharma**.

Further, it is declared that the short synopsis is within the plagiarism limit and copy of the same is attached as per the University norms.

Vinay Kumar

(Vinay Kumar)
Registration Number MRUMCDN012K220026

MANAV RACHNA UNIVERSITY

Declared as State Private University vide Haryana Act 26 of 2014

MANAV RACHNA UNIVERSITY
Sector-43, Aravali Hills, Faridabad

Date: 24-5-24

CERTIFICATE BY SUPERVISOR(S)

This is to certify that, the short synopsis entitled **"EVALUATION OF MARKETING STRATEGIES FOR ELECTRIC & HYBRID ELECTRIC VEHICLES IN NCR"** is an original piece of work done by research scholar **Mr. Vinay Kumar** under the supervision of **Dr. Yogita Sharma** for the degree of Doctor of Philosophy in the Department of Management and Commerce under the School of Management and Commerce of Manav Rachna University, Faridabad during the academic year 2023-2024.

Further, it is certified that the short synopsis is within the plagiarism limit and copy of the same is attached as per the University norms.

Signature of the Supervisor
Dr. Yogita Sharma
Professor
Manav Rachna University
Faridabad

ABSTRACT

The transition towards Electric Vehicles (EVs) and Hybrid Electric Vehicles (HEVs) is a critical step in mitigating environmental challenges and advancing sustainable mobility. This research aims to evaluate the marketing strategies for EVs and HEVs in the National Capital Region (NCR) of India, a region characterized by its rapid urbanization and environmental consciousness. Through a comprehensive literature review and a mixed-methods approach combining surveys and interviews, this study will explore the marketing strategies adopted by manufacturers, the factors influencing consumer satisfaction and loyalty, and the key drivers of EV and HEV adoption. The objectives include analyzing marketing strategies, examining customer satisfaction factors, investigating loyalty intentions, and identifying the primary catalyst in the adoption process. Expected outcomes include actionable insights for enhancing marketing strategies, improving consumer satisfaction, fostering loyalty, and accelerating the adoption of EVs and HEVs in the NCR. This research contributes to the understanding of consumer behavior in the context of sustainable mobility and provides a foundation for future studies in this evolving field.

Key words: Hybrid Electric Vehicles, Marketing Strategies, Consumer Satisfaction, NCR.

CONTENTS

INTRODUCTION……01

LITERATURE REVIEW…….03

DESCRIPTION OF THE BROAD AREA……..09

OBJECTIVE OF THE STUDY……11

HYPOTHESIS……..11

RESEARCH MODEL……..13

RESEARCH DESIGN AND METHODOLOGY……15

IMPLICATIONS……..16

REFERENCES…….18

INTRODUCTION

The global automotive industry is at a pivotal juncture, marked by a significant shift towards sustainable transportation solutions. Electric Vehicles (EVs) and Hybrid Electric Vehicles (HEVs) are at the forefront of this transformation, driven by the urgent need to address environmental concerns, reduce greenhouse gas emissions, and decrease dependency on fossil fuels. The National Capital Region (NCR) of India, characterized by its dense population, high pollution levels, and growing economic stature, presents a compelling case for the adoption of EVs and HEVs. This research aims to evaluate the marketing strategies for EVs and HEVs in the NCR, focusing on the dynamics that influence consumer behavior, satisfaction, and loyalty, and identifying the primary catalysts in the adoption process.

The Rise of EVs and HEVs

The transition to EVs and HEVs is fueled by several global and local factors, including technological advancements, policy incentives, and changing consumer preferences. Governments worldwide are implementing policies to promote the adoption of electric vehicles, such as subsidies, tax incentives, and infrastructure development projects (Sierzchula et al., 2014). In India, the government has launched initiatives like the National Electric Mobility Mission Plan (NEMMP) and Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles (FAME) schemes to boost EV and HEV adoption (Ministry of Heavy Industries & Public Enterprises, 2019).

Technological advancements have also played a crucial role in making EVs and HEVs more accessible and appealing to consumers. Improvements in battery technology, increased range, reduced charging times, and the availability of more models have addressed many initial consumer concerns (Nykvist & Nilsson, 2015). Moreover, the growing awareness of environmental issues and the desire for sustainable lifestyle choices are driving consumer interest in EVs and HEVs (Egbue & Long, 2012).

Marketing Strategies for EVs and HEVs

The marketing of EVs and HEVs presents unique challenges and opportunities. Unlike traditional vehicles, EVs and HEVs require marketers to address range anxiety, charging infrastructure concerns, and higher upfront costs (Axsen & Kurani, 2013). Effective

marketing strategies must not only highlight the environmental benefits and cost savings over the vehicle's lifetime but also address these concerns through education and awareness campaigns.

Digital marketing plays a pivotal role in reaching potential EV and HEV buyers, leveraging social media, online advertising, and digital platforms to educate consumers about the benefits of electric mobility (Kaplan & Haenlein, 2010). Additionally, experiential marketing, including test drives and interactive experiences, has proven effective in changing consumer perceptions and encouraging the adoption of EVs and HEVs (Maklan & Klaus, 2011).

Consumer Behavior, Satisfaction, and Loyalty

Understanding consumer behavior is crucial for the successful marketing of EVs and HEVs. Factors influencing consumer purchase decisions include environmental awareness, perceived benefits, and social influences (Axsen, TyreeHageman, & Lentz, 2012). Customer satisfaction and loyalty are also vital, as they influence word-of-mouth recommendations and repeat purchases. The quality of the post-purchase experience, including after-sales service and support for charging infrastructure, significantly impacts consumer satisfaction and loyalty intentions (Oliver, 1999; Zeithaml, Berry, & Parasuraman, 1996).

Objectives and Significance of the Study

This research aims to provide a comprehensive evaluation of the marketing strategies for EVs and HEVs in the NCR, with a focus on understanding the factors that influence consumer behavior, satisfaction, and loyalty. By identifying the most influential factor guiding the adoption of EVs and HEVs, this study seeks to unveil the primary catalyst in the adoption process, offering valuable insights for manufacturers, policymakers, and marketers to enhance the effectiveness of their strategies. The significance of this study lies in its contribution to the growing body of knowledge on sustainable mobility, particularly in the context of emerging markets like India. By focusing on the NCR, a region with unique challenges and opportunities for EV and HEV adoption, this research provides targeted insights that can inform policy decisions and marketing strategies, ultimately facilitating the transition towards a more sustainable transportation system.

LITERATURE REVIEW

Evolution of Marketing Strategies for EVs and HEVs

The evolution of marketing strategies for Electric Vehicles (EVs) and Hybrid Electric Vehicles (HEVs) over the past decade is a testament to the dynamic interplay between technological innovation, shifting consumer attitudes, and evolving policy landscapes. This transformation in marketing approaches reflects a broader shift in the automotive industry, from a niche market focused on environmental enthusiasts to a mainstream audience with diverse priorities and concerns.

In the early stages of EV and HEV introduction, marketing strategies were predominantly centered around the environmental benefits of these vehicles. Manufacturers and marketers targeted a niche segment of the market composed of environmentally conscious consumers who were motivated by the desire to reduce their carbon footprint and contribute to combating climate change. Jansson (2011) highlights how initial marketing efforts emphasized the vehicles' low emissions, reduced carbon footprint, and the use of renewable energy sources, appealing to the eco-friendly sensibilities of potential buyers. This approach was effective in garnering the interest of a specific consumer base that prioritized environmental values over cost or performance.

However, as the technology behind EVs and HEVs advanced and consumer awareness grew, the market began to evolve. The focus of marketing strategies expanded beyond the narrow emphasis on environmental benefits to include the economic advantages, technological innovations, and enhanced performance features of these vehicles. Egbue & Long (2012) and Kaplan & Haenlein (2010) discuss this shift, noting that consumers began to show interest in the long-term cost savings associated with reduced fuel consumption and lower maintenance requirements of EVs and HEVs. This broadened the appeal of electric and hybrid vehicles to a wider audience, including those motivated by economic considerations as well as environmental concerns.

Sharma (2023) explored Honda's marketing strategy, focusing on its dedication to eco-friendly practices and innovation in fuel-cell and hybrid vehicles, highlighting Honda's commitment to environmental stewardship.

Mpoi et al. (2023) investigated the low adoption of electric cars in Greece, the study emphasizes the "I move electrically" subsidy program and identifies factors such as infrastructure, charging times, financial incentives, and environmental awareness influencing EV purchasing decisions.

Secinaro et al. (2022) through bibliometric analysis, the study maps key research centers, co-citation networks, and thematic priorities in consumer behavior research for electric vehicles, offering a comprehensive consumer profile and contributing to scholarly discourse.

Sriram et al. (2022) examined factors influencing EV purchasing intentions in Bengaluru, the study identifies financial barriers, vehicle performance, charging infrastructure, environmental conservation, societal impact, and EV social awareness as significant influencers.

Technological innovations have also played a crucial role in reshaping marketing strategies for EVs and HEVs. Advances in battery technology, increased range, faster charging times, and the introduction of high-performance models have addressed many of the initial barriers to adoption. Marketers have capitalized on these advancements, highlighting the convenience, reliability, and superior driving experience offered by the latest generation of EVs and HEVs. This focus on technological prowess and performance attributes has attracted a segment of consumers interested in cutting-edge technology and the prestige associated with owning an advanced vehicle.

Jaiswal et al. (2022) investigated BEV adoption in India, the study integrates socio-demographic and social-psychological factors, revealing the impact of socio-demographic variables on attitudes and intentions regarding BEVs.

Sharma and Parashar (2021) analyzed Indian consumers' perceptions of EVs, the study identifies government incentives, fuel economy, and environmental concerns as key motivators, emphasizing the need for regulatory changes and infrastructure improvements.

Sierzchula and Rietmann (2021) examined legislative changes' impact on Dutch consumers' EV inclinations, the study underscores the importance of infrastructure development and financial incentives in encouraging EV adoption.

The advent and proliferation of digital marketing have further revolutionized the way EVs and HEVs are marketed. Kaplan & Haenlein (2010) emphasize the growing importance of online platforms, social media, and digital storytelling in engaging potential buyers. Digital marketing strategies have enabled manufacturers to reach a broader audience, provide detailed information about their vehicles, and engage with consumers in interactive and personalized ways. Through social media campaigns, targeted online advertising, and the creation of engaging digital content, marketers have been able to demystify EVs and HEVs, address consumer questions and concerns, and build a community of enthusiasts and advocates.

Thus, the marketing strategies for EVs and HEVs have undergone significant evolution over the past decade, reflecting the changing landscape of consumer preferences, technological advancements, and policy initiatives. From a narrow focus on environmental benefits to a comprehensive approach that includes economic benefits, technological innovations, and performance features, the marketing of EVs and HEVs has adapted to meet the diverse needs and interests of a broader consumer base. The rise of digital marketing has further transformed the way these vehicles are promoted, enabling more effective engagement with potential buyers and fostering a growing market for sustainable transportation solutions.

Consumer Behavior Towards EVs and HEVs

Consumer behavior towards Electric Vehicles (EVs) and Hybrid Electric Vehicles (HEVs) is shaped by a myriad of factors that span psychological, social, and economic dimensions. The decision to purchase an EV or HEV is not solely based on environmental altruism but is a nuanced process influenced by practical considerations and societal influences.

Environmental concern is undeniably a significant driver for many potential EV and HEV buyers, reflecting a growing awareness of climate change and a collective desire to reduce personal carbon footprints. Egbue and Long (2012) underscore the importance of environmental motivations in the decision-making process for purchasing EVs and HEVs, suggesting that these vehicles appeal to consumers' desire to contribute positively to environmental sustainability. However, this environmental motivation is often counterbalanced by concerns related to the cost of EVs and HEVs, their driving range, and the availability of charging infrastructure. These practical considerations represent significant

barriers to adoption, as they directly impact the convenience and usability of electric vehicles (Axsen & Kurani, 2013).

Social influence and perceived social norms also play a crucial role in shaping consumer attitudes towards EVs and HEVs. Axsen, TyreeHageman, and Lentz (2012) highlight the impact of social networks, noting that individuals are more inclined to consider purchasing an EV or HEV if they have direct contact with current owners. This social proof mechanism can significantly reduce perceived risks associated with EVs and HEVs, making them more attractive to potential buyers.

Nikowitz et al. (2016) focused on improving hybrid and EV systems' performance and integration, the study highlights the crucial role of successful integration in enhancing vehicle economy, cost savings, and overall driving experience.

Pirmoradi and Wang (2015) investigated PHEV scalable product family design, the study identifies critical design factors impacting PHEV performance, emphasizing the need for thoughtful consideration for effective and appealing designs.

Sierzchula et al. (2014) analyzed the effects of financial incentives and socio-economic variables on EV uptake globally, the study emphasizes the significant impact of financial incentives on increasing EV adoption rates and considers other influential factors like urbanization and environmental consciousness.

"Range anxiety," or the fear of running out of battery power without access to a charging station, has been identified as a key concern deterring consumers from embracing EVs. Franke and Krems (2013) suggest that this anxiety can be alleviated through education and firsthand experience, indicating that as consumers become more familiar with the capabilities and reliability of EVs, their apprehensions diminish.

The decision to purchase an EV or HEV is influenced by a complex interplay of factors. While environmental concern is a primary motivator, economic considerations, social influence, and practical concerns like range anxiety also play significant roles. Addressing these concerns through education, infrastructure development, and social marketing strategies is essential for increasing the adoption of EVs and HEVs.

Factors Influencing Customer Satisfaction and Loyalty

In the burgeoning market of Electric Vehicles (EVs) and Hybrid Electric Vehicles (HEVs), customer satisfaction and loyalty emerge as pivotal elements that not only drive repeat purchases but also fuel positive word-of-mouth, significantly impacting the market penetration of these sustainable transportation options. The literature identifies a constellation of factors that influence customer satisfaction, including vehicle performance, reliability, the convenience of charging infrastructure, and the quality of after-sales service (Oliver, 1999; Zeithaml, Berry, & Parasuraman, 1996). These elements are crucial in shaping the overall consumer experience, with each aspect playing a significant role in determining the likelihood of continued patronage and advocacy for EVs and HEVs.

Vehicle performance and reliability are foundational to customer satisfaction, as they directly affect the usability and perceived value of EVs and HEVs. Consumers expect these vehicles to not only match but potentially exceed the performance and reliability standards of traditional internal combustion engine vehicles. The convenience of charging infrastructure is another critical factor, as the ease with which consumers can charge their vehicles directly influences their daily usage experience and alleviates concerns related to range anxiety.

Furthermore, the quality of after-sales service significantly impacts customer satisfaction. Effective after-sales support, including maintenance and repair services, warranty fulfillment, and customer service interactions, ensures that consumers feel valued and supported throughout their ownership journey.

Beyond these tangible factors, loyalty intentions among EV and HEV consumers are profoundly influenced by the degree to which the product aligns with their self-identity and values, especially concerning environmental concern (Bamberg, 2013). Consumers who identify strongly with environmental values are more likely to develop loyalty towards EVs and HEVs, as these vehicles symbolize a commitment to sustainability and reduced environmental impact. This alignment between product attributes and personal values fosters a deeper emotional connection to the brand, enhancing loyalty intentions.

Customer satisfaction and loyalty in the EV and HEV market are multifaceted constructs influenced by a blend of performance, reliability, convenience, service quality, and value alignment. Addressing these factors effectively is essential for manufacturers and service

providers aiming to build a loyal customer base and accelerate the adoption of EVs and HEVs.

Catalysts for Adoption

The adoption of Electric Vehicles (EVs) and Hybrid Electric Vehicles (HEVs) is significantly influenced by a confluence of factors that span policy incentives, technological advancements, and evolving consumer attitudes. These elements collectively shape the landscape for EV and HEV adoption, addressing both the practical and perceptual barriers that potential consumers face.

Government policies play a pivotal role in fostering the adoption of EVs and HEVs. Initiatives such as subsidies, tax incentives, and significant investments in charging infrastructure are instrumental in making these vehicles more accessible and financially attractive to a broader audience. Sierzchula et al. (2014) emphasize the importance of such policy measures, noting that they can significantly lower the initial cost barriers and alleviate concerns related to the convenience and feasibility of owning and operating EVs and HEVs. These policies not only make EVs and HEVs more competitive against traditional vehicles but also signal government commitment to sustainable transportation, which can further influence consumer attitudes.

Technological advancements are equally critical in driving the adoption of EVs and HEVs. Improvements in battery technology, increases in driving range, reductions in charging time, and overall enhancements in vehicle performance address many of the early criticisms of EVs and HEVs. Nykvist & Nilsson (2015) highlight how these advancements have led to a decrease in costs and an improvement in the value proposition offered by EVs and HEVs, making them a more viable option for a wide range of consumers.

Moreover, the growing societal emphasis on sustainability and the increasing social visibility of EVs and HEVs have been instrumental in changing consumer attitudes and adoption behaviors. Rogers (2003) discusses how societal trends towards environmental consciousness and sustainable living have made consumers more receptive to adopting green technologies, including EVs and HEVs. The visibility of these vehicles on the road and in the media, along with positive endorsements from early adopters, further contributes to shaping public perception and encouraging adoption.

DESCRIPTION OF BROAD AREA

The transition towards sustainable transportation, particularly through the adoption of Electric Vehicles (EVs) and Hybrid Electric Vehicles (HEVs), represents a critical shift in automotive technology and consumer behavior. This shift is not only pivotal for environmental sustainability but also for the evolution of urban mobility, especially in densely populated regions like the National Capital Region (NCR) of India. The evaluation of marketing strategies for EVs and HEVs in the NCR encapsulates a broad area of research that intersects consumer behavior, environmental policy, and marketing efficacy.

Operational Definitions of key terms

- **Electric Vehicles (EVs):** Vehicles that operate exclusively on electric power, utilizing one or more electric motors for propulsion. They rely on batteries as their primary energy source, which can be recharged from the electrical grid.
- **Hybrid Electric Vehicles (HEVs):** Vehicles that combine an internal combustion engine with an electric propulsion system. HEVs utilize energy stored in batteries, which is generated through regenerative braking and by the internal combustion engine, not requiring external charging.
- **Marketing Strategies:** The comprehensive plans developed by organizations to communicate the benefits of a product or service to the target market. In the context of EVs and HEVs, these strategies encompass advertising, public relations, direct marketing, and sales tactics aimed at increasing awareness and adoption.
- **Consumer Satisfaction:** A measure of how products or services meet or surpass customer expectations. In the realm of EVs and HEVs, satisfaction can be influenced by factors such as vehicle performance, charging infrastructure, and after-sales service.
- **Consumer Loyalty:** The likelihood of repeated purchases by consumers and their propensity to recommend the product to others. Loyalty is built over time and is influenced by continuous satisfaction and perceived value.

Research Gaps

Despite the burgeoning interest in EVs and HEVs, several research gaps persist, particularly in the context of the NCR:

1. There is limited empirical evidence on the specific marketing strategies that effectively influence the adoption of EVs and HEVs in emerging markets like the NCR. Understanding the nuances of consumer response to different marketing tactics remains underexplored.
2. Insights into the factors that drive satisfaction and loyalty among EV and HEV consumers in the NCR are sparse. The relationship between satisfaction derived from various attributes of EVs/HEVs and subsequent loyalty intentions needs further investigation.
3. The primary factors or catalysts that significantly influence the decision to adopt EVs and HEVs in the NCR are not well-documented. Identifying these catalysts is crucial for tailoring effective marketing strategies and policies.

Theoretical Background

The theoretical foundation of this research is built upon two main theories: the Diffusion of Innovations Theory and the Theory of Planned Behavior.

Diffusion of Innovations Theory (Rogers, 2003): This theory provides a framework for understanding how, why, and at what rate new ideas and technology spread. It categorizes adopters into segments based on their readiness to adopt new technologies and identifies factors influencing adoption rates, such as relative advantage, compatibility, complexity, trialability, and observability. Applying this theory to EVs and HEVs can elucidate the diffusion process of these vehicles in the NCR.

Theory of Planned Behavior (Ajzen, 1991): This theory posits that individual behavior is driven by behavioral intentions, which are influenced by attitudes towards the behavior, subjective norms, and perceived behavioral control. In the context of EVs and HEVs, this theory can help understand the psychological factors influencing consumers' intentions to purchase and use these vehicles, including environmental attitudes, social influences, and perceived ease of use.

These theoretical perspectives provide a robust framework for exploring the dynamics of EV and HEV adoption in the NCR. They highlight the importance of understanding consumer attitudes, the influence of social norms, and the role of perceived ease and benefits of adoption. By integrating these theories, this research aims to offer comprehensive insights into the effectiveness of marketing strategies, the factors affecting consumer satisfaction and loyalty, and the key drivers behind the adoption of EVs and HEVs.

OBJECTIVES OF THE STUDY

The objectives of present study are:

1. To study the marketing strategies adopted by manufactures in the context of Electric Vehicles (EV) and Hybrid Electric Vehicles (HEV).
2. To study the factors affecting the customer satisfaction in context of Electric Vehicles (EV) and Hybrid Electric Vehicles (HEV).
3. To study the factors leads to consumer loyalty intention in context of Electric Vehicles (EV) and Hybrid Electric Vehicles (HEV).
4. To Identify the singularly most influential factor guiding the adoption of Electric Vehicles (EV) and Hybrid Electric Vehicles (HEV), focusing on unveiling the primary catalyst in the adoption process.

HYPOTHESIS

Given the complexity and depth of the research topic on the evaluation of marketing strategies for Electric Vehicles (EVs) and Hybrid Electric Vehicles (HEVs) in the National Capital Region (NCR), the hypotheses section warrants a comprehensive exploration to align with the objectives of the study. This detailed examination will not only articulate the hypotheses but also delve into the rationale behind each, drawing from existing literature and theoretical frameworks to substantiate the proposed relationships.

Hypotheses Development

H1: Effective Marketing Strategies and Adoption Rates

Hypothesis 1 (H1): Effective marketing strategies positively influence the adoption rate of EVs and HEVs in the NCR.

Rationale: The adoption of EVs and HEVs is significantly influenced by how these vehicles are marketed to potential consumers. Marketing strategies that effectively communicate the benefits, alleviate concerns related to range anxiety and charging infrastructure, and highlight government incentives can significantly impact consumer attitudes and adoption decisions (Rogers, 2003; Kotler & Keller, 2016). This hypothesis is grounded in the diffusion of innovations theory, which posits that the dissemination of information about an innovation significantly affects its adoption (Rogers, 2003).

H2: Customer Satisfaction Factors

Hypothesis 2 (H2): Customer satisfaction with EVs and HEVs is significantly influenced by vehicle performance, charging infrastructure, and after-sales service.

Rationale: Customer satisfaction is a multifaceted construct that in the context of EVs and HEVs, extends beyond the vehicle's performance to include aspects such as the availability and convenience of charging infrastructure and the quality of after-sales service (Oliver, 1999; Zeithaml, Berry, & Parasuraman, 1996). The expectation-confirmation theory suggests that satisfaction is the result of a comparison between pre-purchase expectations and post-purchase perceptions (Oliver, 1980). Thus, how well the EVs/HEVs and associated services match or exceed consumer expectations plays a critical role in determining satisfaction.

H3: Determinants of Consumer Loyalty Intentions

Hypothesis 3 (H3): Consumer loyalty intentions towards EVs and HEVs are driven by satisfaction, perceived environmental benefits, and social influence.

Rationale: Loyalty intentions in the context of EVs and HEVs are not only a product of customer satisfaction but are also influenced by the perceived environmental benefits of these vehicles and the social influence exerted by peers and societal norms (Ajzen, 1991; Bamberg, 2013). The theory of planned behavior (Ajzen, 1991) supports this notion by highlighting the role of subjective norms and perceived behavioral control in shaping intentions, suggesting

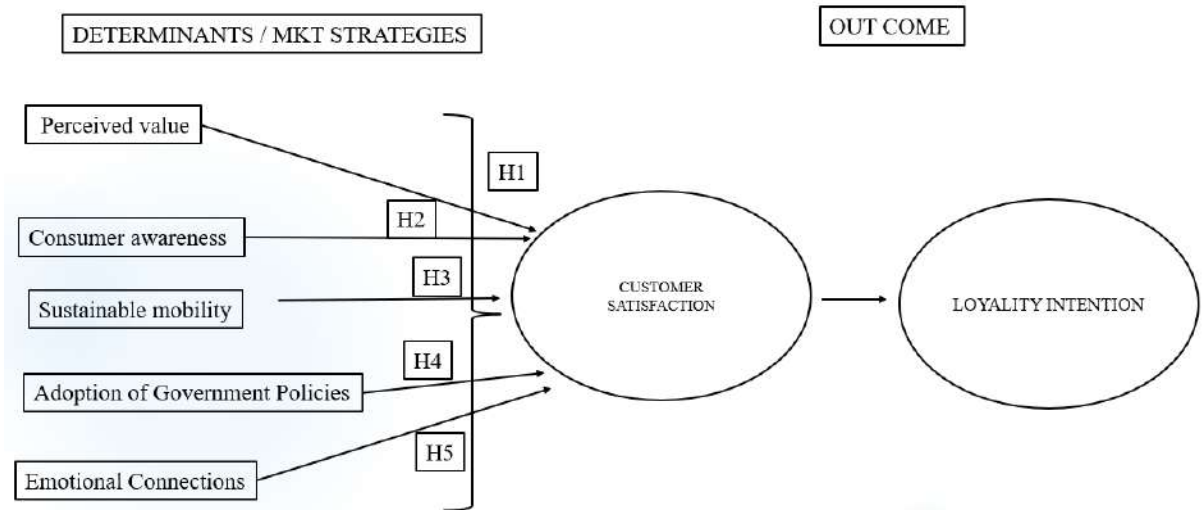
that social influence and environmental consciousness can significantly impact loyalty towards environmentally friendly products.

H4: Primary Factor Guiding Adoption

Hypothesis 4 (H4): There is a singularly most influential factor (e.g., government incentives, technological advancements, environmental concern) that guides the adoption of EVs and HEVs in the NCR.

Rationale: While several factors contribute to the adoption of EVs and HEVs, this hypothesis posits that one factor stands out as the primary catalyst in the decision-making process. This could be government incentives that make EVs and HEVs financially attractive, technological advancements that address range and charging concerns, or a strong environmental concern that motivates consumers to make sustainable choices. Identifying this primary factor is crucial for tailoring strategies to accelerate adoption (Sierzchula et al., 2014; Nykvist & Nilsson, 2015).

RESEARCH MODEL



This research model depicts a theoretical framework examining the determinants of customer satisfaction and how it subsequently affects loyalty intention. The model proposes that customer satisfaction is influenced by five key determinants:

Perceived value (H1): This suggests that the value customers believe they receive from a product or service influences their satisfaction.

Consumer awareness (H2): This implies that the extent to which consumers are aware of the product or service affects their satisfaction.

Sustainable mobility (H3): This indicates that customer satisfaction may be influenced by how the product or service aligns with sustainable practices.

Adoption of Government Policies (H4): This denotes the impact of government policies on customer satisfaction, presuming that favorable policies can enhance satisfaction.

Emotional Connections (H5): This reflects the idea that the emotional bond customers feel with the product or service affects their level of satisfaction.

Each of these determinants is hypothesized (H1 to H5) to have a direct impact on customer satisfaction. In turn, the level of customer satisfaction is predicted to have a direct effect on loyalty intention, which is the likelihood of the customer continuing to purchase or support the product or service in the future. The model outlines a causal path from various strategic determinants through to a final outcome of loyalty, suggesting that strategies which enhance these determinants can lead to greater customer loyalty.

RESEARCH DESIGN AND METHODOLOGY

The proposed research will be descriptive survey Research.

- **Population:** Customers of Automotive passenger vehicles in the geographical location of Delhi NCR region.
- **Sample:** Sample size of Approx 600 customers holding Automotive passenger vehicles in the geographical location of Delhi NCR region.

Variables of the study

Independent Variables

- Perceived value.
- Consumer awareness
- Sustainable mobility
- Adoption of Government policies & initiatives
- Emotional connections

Dependent Variables

- Consumer Satisfaction
- Consumer Locality.

Data Collection

Primary Data

- Surveys and Questionnaires.
- Interviews.
- Focus Groups.
- Field Observations.

Secondary Data

- Industry Reports.
- Academic Journals and Articles.

- Company Publications.
- Online Databases and Resources.
- Government and Policy Documents.

Statistical Technique

- Appropriate Statistical technique will be used.

Data Analysis

IMPLICATIONS

Theoretical Implications

1. This research will enrich the understanding of technology adoption theories, such as the Diffusion of Innovations and the Theory of Planned Behavior, by applying them to the context of EVs and HEVs in a densely populated urban environment like the NCR. It will explore how these theories hold up in the face of the unique challenges and opportunities presented by the sustainable transportation sector.
2. By examining the factors that influence customer satisfaction and loyalty towards EVs and HEVs, the study will contribute to the broader literature on consumer behavior, particularly in the context of green technologies. It will provide a nuanced understanding of how environmental concerns, social influences, and perceived behavioral control impact consumer decisions in emerging markets.
3. The research will bridge the gap between marketing strategies and environmental sustainability, offering a model for how marketing practices can be leveraged to promote sustainable consumer choices. This will add to the theoretical discourse on green marketing and its effectiveness in driving the adoption of environmentally friendly technologies.
4. By focusing on the NCR, a region with its own cultural and economic idiosyncrasies, the study will contribute to the understanding of cross-cultural differences in

technology adoption. This will provide valuable insights into how global theories of technology adoption need to be adapted or modified to fit local contexts, particularly in developing countries.

Managerial Implications

1. The findings will offer manufacturers and marketers of EVs and HEVs actionable insights into optimizing their marketing strategies to address the specific needs and preferences of consumers in the NCR. This could include targeted advertising campaigns, enhanced customer engagement efforts, and personalized marketing messages.
2. Policymakers will gain evidence-based recommendations on how to structure incentives and support mechanisms to encourage the adoption of EVs and HEVs. This could involve adjustments to subsidy schemes, investments in charging infrastructure, or public awareness campaigns about the benefits of electric mobility.
3. Insights into the factors that drive customer satisfaction and loyalty will enable manufacturers to improve product design, customer service, and after-sales support. This will help in building a loyal customer base and fostering positive word-of-mouth, which is crucial for the long-term success of EVs and HEVs in the market.
4. Understanding the singularly most influential factor guiding the adoption of EVs and HEVs will equip stakeholders with the knowledge to effectively address the primary barriers to adoption. This could lead to focused efforts on technological innovation, infrastructure development, or consumer education, depending on the identified key driver, thereby accelerating the market penetration of sustainable vehicles.

REFERENCES

1. Axsen, J., & Kurani, K. S. (2013). Social influence, consumer behavior, and low-carbon energy transitions. Annual Review of Environment and Resources, 38, 311-340.
2. Axsen, J., TyreeHageman, J., & Lentz, A. (2012). Lifestyle practices and pro-environmental technology. Ecological Economics, 82, 64-74.
3. Maklan, S., & Klaus, P. (2011). Customer experience: Are we measuring the right things? International Journal of Market Research, 53(6), 771-792.
4. Ministry of Heavy Industries & Public Enterprises. (2019). FAME India Scheme.
5. Egbue, O., & Long, S. (2012). Barriers to widespread adoption of electric vehicles: An analysis of consumer attitudes and perceptions. Energy Policy, 48, 717-729. https://doi.org/10.1016/j.enpol.2012.06.009
6. Jansson, J. (2011). Consumer eco-innovation adoption: Assessing attitudinal factors and perceived product characteristics. Biodiversity and Conservation, 20(3), 491-510. https://doi.org/10.1007/s10531-010-9968-1
7. Kaplan, A. M., & Haenlein, M. (2010). Users of the world, unite! The challenges and opportunities of Social Media. Business Horizons, 53(1), 59-68. https://doi.org/10.1016/j.bushor.2009.09.003
8. Franke, T., & Krems, J. F. (2013). What drives range preferences in electric vehicle users? Transport Policy, 30, 56-62. https://doi.org/10.1016/j.tranpol.2013.07.005
9. Bamberg, S. (2013). Changing environmentally harmful behaviors: A stage model of self-regulated behavioral change. Journal of Environmental Psychology, 34, 151-159. https://doi.org/10.1016/j.jenvp.2013.01.002
10. Oliver, R. L. (1999). Whence consumer loyalty? Journal of Marketing, 63(Special Issue), 33-44. https://doi.org/10.2307/1252099
11. Zeithaml, V. A., Berry, L. L., & Parasuraman, A. (1996). The behavioral consequences of service quality. Journal of Marketing, 60(2), 31-46. https://doi.org/10.2307/1251929

12. Nykvist, B., & Nilsson, M. (2015). Rapidly falling costs of battery packs for electric vehicles. Nature Climate Change, 5(4), 329-332. https://doi.org/10.1038/nclimate2564

13. Rogers, E. M. (2003). Diffusion of Innovations (5th ed.). Free Press.

14. Sierzchula, W., Bakker, S., Maat, K., & van Wee, B. (2014). The influence of financial incentives and other socio-economic factors on electric vehicle adoption. Energy Policy, 68, 183-194. https://doi.org/10.1016/j.enpol.2014.01.043

15. Society of Indian Automobile Manufacturers (SIAM). (2013). National Electric Mobility Mission Plan 2020.

16. Kumar, P., & Dahiya, R. (2019). Effective marketing strategies for electric vehicles in India. Journal of Marketing & Communication, 8(3), 14-22.

17. Singh, J., & Sahu, S. (2020). Transitioning to electric vehicles: A marketing perspective. Indian Journal of Marketing, 50(4), 7-19.

18. Sharma, A., & Parashar, A. (2021). Consumer attitudes towards electric vehicles in India. Journal of Sustainable Mobility, 2(1), 35-45.

19. Khan, M. A., & Kockelman, K. M. (2020). Predicting the market potential of plug-in electric vehicles using multivariate analysis. Energy Policy, 140, 111428.

20. Singh, J. (2021). Charging ahead: EV infrastructure in India. Indian Infrastructure, 23(7), 54-59.

21. Patel, D., & Jain, S. (2020). Electric vehicle market and its future in India. Economic Times.

22. Gupta, H., & Jain, K. (2021). Battery swapping technology: The future of EV charging. Business Standard.

23. Pirmoradi, Z., & Wang, G. G. (2015, August). Sensitivity and correlation analysis and implications in scalable product family design for plug-in hybrid electric vehicles. In International Design Engineering Technical Conferences and Computers and Information in Engineering Conference (Vol. 57083, p. V02BT03A038). American Society of Mechanical Engineers.

24. Sharma, A. Marketing Strategy and" Green Path" of Honda. IJFMR-International Journal For Multidisciplinary Research, 5(3).

25. Nikowitz, M., Boyd, S., Vezzini, A., Kunz, I., Duoba, M., Gallagher, K., ... & Garnier, L. (2016). System Optimization and Vehicle Integration. Advanced Hybrid and Electric Vehicles: System Optimization and Vehicle Integration, 87-204.

26. Sierzchula, W., & Rietmann, N. (2021). The influence of policy measures on consumer intention to adopt electric vehicles: Evidence from the Netherlands. Transportation Research Part A: Policy and Practice, 145, 1-11.

27. Mpoi, G., Milioti, C., & Mitropoulos, L. (2023). Factors and incentives that affect electric vehicle adoption in Greece. International Journal of Transportation Science and Technology.

28. Secinaro, S., Calandra, D., Lanzalonga, F., & Ferraris, A. (2022). Electric vehicles' consumer behaviours: Mapping the field and providing a research agenda. Journal of Business Research, 150, 399-416.

29. Ajzen, I. (1991). The theory of planned behavior. Organizational Behavior and Human Decision Processes, 50(2), 179-211.

30. Kotler, P., & Keller, K. L. (2016). Marketing Management (15th ed.). Pearson Education.

31. Oliver, R. L. (1980). A cognitive model of the antecedents and consequences of satisfaction decisions. Journal of Marketing Research, 17(4), 460-469.

32. KV, S., Michael, L. K., Hungund, S. S., & Fernandes, M. (2022). Factors influencing adoption of electric vehicles–A case in India. Cogent Engineering, 9(1), 2085375.

33. Jaiswal, D., Kaushal, V., Deshmukh, A. K., Kant, R., & Kautish, P. (2022). What drives electric vehicles in an emerging market? Marketing Intelligence & Planning, 40(6), 738-754.

MANAV RACHNA
vidyanatariksha

Swami Vivekananda Library and Resource Centre
Manav Rachna University

SIMILARITY VERIFICATION CERTIFICATE

Title: Evaluation of Marketing Strategies for Electrical and Hybrid electrical vehicles in NCR

Researcher: VINAY KUMAR

Registration Number: MRUMCDN012K220026

Supervisor: Dr. YOGITA SHARMA

Department: Deptt of Mgt & Commerce

This is to certify that the above mentioned Short Synopsis/Thesis was scanned for similarity index through Turnitin Software on 15/2/24 with submission ID 2295337487 and the similarity index was found to be 8 %. The complete report running into 26 Pages, 5542 Word count with File Size 3079 KB is being forwarded to the Research Supervisor/DRC/DRB for review.

Date: 15-02-2024

MANAV RACHNA UNIVERSITY FARIDABAD
15/2/24

The complete report of the above Short Synopsis/Thesis has been reviewed and the similarity index is below the accepted norms as per the University Grants Commission (Promotion of Academic Integrity and Prevention of Plagiarism in Higher Educational Institutions) Regulations 2018. The Short Synopsis/Thesis may be considered for further processing

Vinay Kumar
Research Scholar

15/2/24
Research Supervisor
Dr. Yogita Sharma

EVALUATION OF MARKETING STRATEGIES FOR ELECTRIC & HYBRID ELECTRIC VEHICLES IN NCR

by Vinay Kumar

Submission date: 15-Feb-2024 12:04PM (UTC+0530)
Submission ID: 2295337487
File name: ING_STRATEGIES_FOR_ELECTRIC_HYBRID_ELECTRIC_VEHICLES_IN_NCR.docx (234.96K)
Word count: 5542
Character count: 34501

EVALUATION OF MARKETING STRATEGIES FOR ELECTRIC & HYBRID ELECTRIC VEHICLES IN NCR

SHORT SYNOPSIS

by

Vinay Kumar
Registration No. MRUMCDN012K220026

Under the supervision of

Dr. Yogita Sharma
Professor

Department of Management and Commerce
School of Management and Commerce

MANAV RACHNA UNIVERSITY
Sector-43, Aravali Hills, Faridabad

Year 2024

ABSTRACT

The transition towards Electric Vehicles (EVs) and Hybrid Electric Vehicles (HEVs) is a critical step in mitigating environmental challenges and advancing sustainable mobility. This research aims to evaluate the marketing strategies for EVs and HEVs in the National Capital Region (NCR) of India, a region characterized by its rapid urbanization and environmental consciousness. Through a comprehensive literature review and a mixed-methods approach combining surveys and interviews, this study will explore the marketing strategies adopted by manufacturers, the factors influencing consumer satisfaction and loyalty, and the key drivers of EV and HEV adoption. The objectives include analyzing marketing strategies, examining customer satisfaction factors, investigating loyalty intentions, and identifying the

primary catalyst in the adoption process. Expected outcomes include actionable insights for enhancing marketing strategies, improving consumer satisfaction, fostering loyalty, and accelerating the adoption of EVs and HEVs in the NCR. This research contributes to the understanding of consumer behavior in the context of sustainable mobility and provides a foundation for future studies in this evolving field.

Key words: Hybrid Electric Vehicles, Marketing Strategies, Consumer Satisfaction, NCR.

EVALUATION OF MARKETING STRATEGIES FOR ELECTRIC & HYBRID ELECTRIC VEHICLES IN NCR

ORIGINALITY REPORT

8%	7%	5%	3%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

Excluding matches less than 14 words

PRIMARY SOURCES

1	dspace.spbu.ru Internet Source	1%
2	P. Saranjan, T. Thilakshan, J.M.S.J. Bandara. "Analyzing Key Determinants Affecting Electric Vehicle Adoption in Sri Lanka: A Comprehensive Evaluation", 2023 Moratuwa Engineering Research Conference (MERCon), 2023 Publication	1%
3	Submitted to Nyenrode Business Universiteit Student Paper	1%
4	www.giiresearch.com Internet Source	1%
5	www.semiconductor-today.com Internet Source	1%
6	Submitted to Sheffield Hallam University Student Paper	<1%
7	link.springer.com Internet Source	<1%

8	dc.library.okstate.edu Internet Source	<1 %
9	Submitted to Stephen F. Austin State University Student Paper	<1 %
10	Nataraj Balasubramanian, Krantiraditya Dhalmahapatra, P. Pragha, Murali Sambasivan. "Sustainable transportation in developing countries: uncovering factors influencing electric vehicle purchase intention in India", Transportation Planning and Technology, 2024 Publication	<1 %
11	Submitted to Adtalem Global Education Student Paper	<1 %
12	Submitted to University of West London Student Paper	<1 %
13	emrbi.org Internet Source	<1 %
14	jurnal.stie-aas.ac.id Internet Source	<1 %
15	vtechworks.lib.vt.edu Internet Source	<1 %
16	Bassem Haidar, Maria Teresa Aguilar Rojas. "The relationship between public charging infrastructure deployment and other socio-	<1 %

economic factors and electric vehicle adoption in France", Research in Transportation Economics, 2022
Publication

17	Submitted to Middlesex University Student Paper	<1 %
18	digitalcommons.fiu.edu Internet Source	<1 %

xclude quotes	On	Exclude matches	< 14 words
xclude bibliography	On		